

DEPT OF THE ARMY
QUARTERMASTER GENERAL'S OFFICE

OFFICIAL BUSINESS.

A person using this envelope to mail the contents thereof
for private matter or pay shall suffer damages in a sum

Fort Huachuca,
John G. Smith

A.P.

Fort Huachuca
Office Brief as to water supply.

Up to 1884 this post was supplied with water

by means of the ordinary water wagon - the teaming gear of an army wagon upon which is mounted a wooden tank of about 40 lbs. capacity - drawn by a six-mule team driven by an enlisted man. The water used was obtained from a well sunk on the border of Huachuca Creek running through the camp (dry for the greater part of the year, the stream fed by springs sinking into the ground and only reappearing at intervals). This well was about 30 ft. deep, was never dry, but was always oily and impure, and sometimes so low that several hours were required to fill the water-wagon. The engine that pumped the water from this well was a 10-horse-power portable steam engine and furnished the power to run a saw and planing machine and lathe.

The Post Quartermaster ~~sustained~~ on March 12, 1884 reported that this November, 1883, when it became difficult to supply the post with the water-wagon, on account of low water

in the well at the saw-mill, an iron pipe was laid temporarily, to the first spring, about half a mile

engine and furnished the power to run a saw and planing

machine and lofts.

The Post Quartermaster ~~water-dale~~ on March 12, 1884 reported
that ~~the~~ November, 1883, when it became difficult to supply
by means of

the post ~~with~~ the water-wagon, on account of low water.

in the well at the saw-mill, an iron pipe was laid
temporarily, to the first spring, about half a mile
above the post, to conduct water to the barnacks
of the horses and the three cavalry stables. The

2

pipe used for this purpose was laid along the ground.
It was taken from ^{pipe on hand} pipe furnished at the post for use in con-
nection with a proposed extension of the water system,
new and ~~old~~ for which complete estimates were forwarded, ~~a letter~~
~~copy~~ ~~date~~ (February 16, 1884). The water of this spring, and
the water of the well at the saw-mill ~~are~~ the same in
quality, having the same source, the creek and boggy
marshes, and was pronounced unfit for domestic
purposes. It was loaded with organic matter, vegetable
decomposition and earth, and imparted a sediment that
coated every vessel in which it was used.

The water to be supplied to the post by the
proposed system, was to be obtained from a spring
located about 3 miles from the post up the canon
Estimate of materials, with plan for water supply,
including pipe and fittings required to conduct
water of this spring to the post were prepared
by Capt. D. H. Filleyd, a. q.m., and forwarded to the post
Feb 16, 1884. This estimate, prepared in accordance
with the views of the post commander and the

including pipe and fittings required to conduct
water of this Spring to the post were prepared
by Capt. D. H. Floyd, a. q.m., and forwarded to the post
Feb 16, 1881. This estimate, prepared in accordance
with the views of the post commander and the recom-
mendations of the Engineer officer acting as Engi-

neer called for

2,000 feet 3-inch pipe
and fittings, &c
10,350 ft. 2½" pipe, ~~298 ft. 3" pipe~~

Approved by the Sec. of War June 21, 1884.

This approved estimate did not include the building of the reservoirs - \$3,704 - (Capt. Floyd's estimate.)

June 23, 1884, the Genl. Telegraphic to Maj. McConaughy, C. G. M., Dept. Arizona - "If contracts can be executed before end of fiscal year provide for double reservoirs, tunnel, iron pipe, and enough labor to do the work at Tucson".

June 29, 1884, Maj. McConaughy reported that the labor would cost \$7,340 - making total cost = ~~as~~ \$17,676.14. itemized as follows:

Purchase of pipe & fixtures, hose, etc., in San Francisco	\$ 9,328.14
Cement for reservoir	<u>1,008.00</u>
Cost of material	10,336.14
Cost of consolded labor.	<u>7.340</u>
June 30, 1884, the Army recd the additional expenditure.	<u>17,676.14</u>
July 3, 1884, the Secretary of War Approved	

the expenditure of the additional sum, required, as above.

Oct. 20, 1884, the post gen. Capt. Floyd, submitted an estimate as follows (prices obtained in S.F. by C. gen. Div. Pac.)

An estimate for roofs to reservoirs, to keep out animals and to preserve the coolness and purity of the water. \$ 1347

Extra pipe, & various fittings & tools required for repairs in connection with water supply. 3,571.14

Hoses, &c. required for extinguishing fires 2,853

Dec. 1, 1884, recommended for approval by the G. M. General. 4,355

Dec. 10, 1884 approved by the Sec. of War.

(~~wooden~~ 1000 ft. of pipe reported on hand)

~~2000 ft. of pipe.~~

~~1000 ft.~~

Also fittings to be required.

A large amount of pipe, of small sizes required, was reported as on hand at the port and available. The cost of the articles called for was not known at the port.

The estimate also contained a computation of the cost of the labor of opening ditches and laying about 20,000 ft. of pipe, if done by enlisted men -

600 days labor, extra duty at 20 ds. per day	\$120.00
200 . plumbing 35 ds.	<u>\$70.00</u>
	\$190.00

The estimate for the construction of a reservoir tunnels &c. called for

\$3,704

These estimates, affid by the C.G. Dept. of
after reference to the Eng. office of the Dept.,
Arizona, were received in the Governor's Office Oct 10, 1884.

April 17, 1884 - the Governor addressed a communication to the Super. Div. of the Pacific, calling for further information before taking action on the estimates. As the reservoirs are to be in solid rock, on a hill 170 ft. above the port; the water to be conducted by gravity from a spring about 2 2/3 miles distant, through pipes. The ~~asked~~ why two reservoirs are necessary. They say one reservoir, with nearly vertical walls and

asked a description of the spring, as to its capacity for the supply, and the quality of the water. Suggested that the supply pipe 2 1/2 in. in diameter should be increased from 4 to 6 inches. If the nature of the ground will admit, stone pipe should be used. Suggests that vitrified pipe be used where suitable. The main supply pipe from the reservoir should be of cast iron, asphalted, and not larger than three inches in diameter.

Asked cost of the necessary pipe & connecting in the San Francisco market. Requested immediate action report in order that contract be made before end of f.y. if the best place is offered and agreed by the Board of Works.

~~Second book with ref.~~ ^{On} June 20. 1847. the

Capt. Floyd, post quartermaster ^{reported} explained that the object of having two reservoirs was for convenience in cleaning & repairs. Cost of excavating a large one would be the same as two smaller ones of equal capacity together. The two reservoirs could contain about 200,000 gallons, considered an ample supply. Basin-shaped reservoirs are preferred as being stronger. The rock is liable to contain

will be best on sloping walls. A man can walk down the side, if necessary and clean and repair, while the other reservoir supplies the water for the post. The spring will readily fill a 4 inch pipe, & the water is of fine quality. Will forward an analysis. Towards a statement of pipe and connection, required - the remainder of the pipe & fittings being on hand. ^{14,300 ft.} A 4 inch pipe is asked for to run from the Spring to the reservoir. Enough 1", 2", 2½" and 3" pipe is on hand at the post to distribute from the reservoir throughout the post and buildings. Pipes corrugated iron 4" pipe, on acc't. of ravines to be crossed and danger of sagging, but will take all precautions in laying any pipe that may be furnished.

The post Comdr explains that the estimates modified, call for civilian instead of extra-duty labor, and that the cost of construction would therefore go through a 3" pipe from the spring would provide a sufficient supply of water.

The Dist. Chf. gen. thought ~~the~~ pipe should run at 5 inches for greater pressure in case of fire.

The Dir. C. gen. estimates cost as follows.

Material for water supply	7.987
Labor	2.000

Report on Water System.

October 20, 1884, Capt. D. K. Floyd, Post Quartermaster
and Quartermaster reported progress in construction of
Water system.

The supply of water both post from the upper
spring is an accomplished fact. Water is introduced
into all the buildings at the front, and the water works
furnish the supply required by families & the troops. Water was
let into the first reservoir completed Sept. 28. 84. The
second reservoir was completed about Nov. 1. 84. One
reservoir furnished an ample supply for the front. It was
always full - the water running into it more than making
up for that drawn out for use at the front. A continual
stream passes out by the waste pipe on the other side of the
Post. Spring at present yields abundance of water, but should
more be required another spring 30 or 40 yds. away may be utilized
by with a little labor, some digging & mason work.
The water in the spring is as clear as crystal, and
objects at the bottom can be distinctly seen. The water
of the spring is taken from bed rock and conducted by a 4 in.
pipe to the basin, without contact with earth or soil.
Thought the services of a plumber would become necessary,
and recommended that one ~~be~~ be engaged at \$100 per m.
This was not approved by the Tech. Cqmr. who considered the post
Engineer (Enlisted) competent to take care after tanks, &c.

On October 25, 1886, the Post St. Mr.
Estimates materials
encloses, for ~~paper~~, to repair and extend the
water supply system, as follows:

200 feet 3 inch pipe, 200 feet 2 $\frac{1}{2}$ inch,
300 feet 2 inch, 200 feet 1 $\frac{1}{2}$ inch,
800 feet 1 inch, 800 feet $\frac{3}{4}$ inch, and
Connections &c.

The estimates, ^{on November 12, 1886,} were returned by Headquarters
Department of Arizona to the Post Quartermaster for
information as to the necessity of the expenditure.

November 17, 1886, the papers are again forwarded
by the Post St. Mr., who recommends that one-half
the articles be furnished. This was approved
by the various Officers and was recd in this office
on December 15, 1886.

On December 23d the case was submitted
to the Secretary of War with recommendation for
Approval, estimated cost — — — — — 760

December 31, 1886 approved by the
War Department; and the Chief St. Mr. Div. of the Pacific
was advised on Jan 5, 1887.